AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

Claims 1 through 34 (Cancelled)

35. (New) A monitoring method comprising the steps of:

(a) acquiring from a plasma etching apparatus a plurality of pieces of process data including values of a plurality of process parameters which are obtained while the plasma etching apparatus is in operation;

(b) after the step (a), dividing the plurality of pieces of process data for the respective process parameters and for respective steps of a process recipe for operating the plasma etching apparatus;

(c) after the step (b), creating a multivariate analysis model using data obtained by dividing the plurality of pieces of process data;

(d) after the step (c), obtaining a principal component value from the plurality of pieces of process data which are newly acquired, by using the multivariate analysis model; and

(e) after the step (d), determining whether the plasma etching apparatus is in normal operation or abnormal operation using the principal component value,

wherein the plurality of pieces of process data includes: a gas pressure and plasma emission voltage in a reaction chamber, a flow rate of helium gas flowing between a lower

electrode and a wafer; and powers of a progressive wave and a reflected wave of a high frequency power supplied from a high frequency power supply to the lower electrode.

36. (New) The monitoring method of claim 35, wherein the plasma etching apparatus includes a plurality of control devices and a controller computer connected to the plurality of control devices, and

in the step (a), the plurality of pieces of process data is obtained from the controller computer in the form of digital data.

37. (New) The monitoring method of claim 36, wherein in the step (a) the plurality of pieces of process data is obtained by using SECS (Semiconductor Equipment Communications Standard), GEM (Genetic Equipment Model) or HSMS (High Speed Message Service) as a communication standard.

38. (New) The monitoring method of claim 35, wherein the plasma etching apparatus includes a plurality of control devices, and

in the step (a), the plurality of pieces of process data is obtained from the plurality of control devices in the form of analog data.

39. (New) The monitoring method of claim 35, wherein in the step (d) the plurality of pieces of process data which are newly acquired includes information to be used in the plasma etching apparatus.

40. (New) A monitoring system comprising means for:

(a) acquiring from a plasma etching apparatus a plurality of pieces of process data including values of a plurality of process parameters which are obtained while the plasma etching apparatus is in operation;

(b) dividing the plurality of pieces of process data for the respective process parameters and for respective steps of a process recipe for operating the plasma etching apparatus;

(c) creating a multivariate analysis model using data obtained by dividing the plurality of pieces of process data;

(d) obtaining a principal component value from the plurality of pieces of process data which are newly acquired, by using the multivariate analysis model; and

(e) determining whether the plasma etching apparatus is in normal operation or abnormal operation using the principal component value,

wherein the plurality of pieces of process data includes a gas pressure and plasma emission voltage in a reaction chamber; a flow rate of helium gas flowing between a lower electrode and a wafer; and powers of a progressive wave and a reflected wave of a high frequency power supplied from a high frequency power supply to the lower electrode.

41. (New) The monitoring system of claim 40, wherein the plasma etching apparatus includes a plurality of control devices and a controller computer connected to the plurality of control devices, and

the means (a) is connected to the controller computer and obtains, from the controller computer, the plurality of pieces of process data in the form of digital data.

42. (New) The monitoring system of claim 41, wherein the means (s) obtains the plurality of pieces of process data by using SECS (Semiconductor Equipment Communications Standard), GEM (Genetic Equipment Model) or HSMS (High Speed Message Service) as a communication standard.

43. (New) The monitoring system of claim 40, wherein the plasma etching apparatus includes a plurality of control devices, and

the means (a) is connected to the plurality of control devices and obtains, from the plurality of control devices, the plurality of pieces of process data in the form of analog data.

44. (New) The monitoring system of claim 40, wherein the plurality of pieces of process data which are newly acquired includes information to be used in the plasma etching apparatus.